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STATE OF ALASKA

William A. Egan, Governor



ANNUAL REPORT OF PROGRESS, 1969 - 1970

FEDERAL AID IN FISH RESTORATION PROJECT F-9-2

SPORT FISH INVESTIGATIONS OF ALASKA

ALASKA DEPARTMENT OF FISH AND GAME

Wallace H. Noerenberg, Commissioner

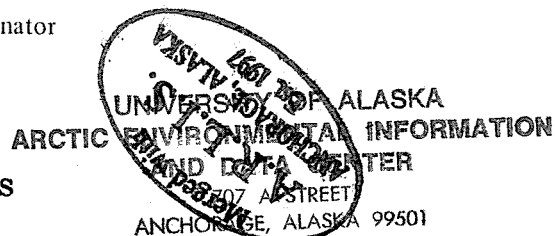
Alaska DIVISION OF SPORT FISH

Rupert E. Andrews, Director

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INTRODUCTION

This report of progress consists of Job Segment Reports from the State of Alaska, Federal Aid In Fish Restoration, Project F-9-2, "Sport Fish Investigations of Alaska".

The studies reported herein are investigations evaluating the sport fish resources of the state. Recreational and other impacts on the fishery resources necessitates a continuous endeavor of ascertaining facts and knowledge of the fisheries. The 24 jobs reported on are of a continuing nature. The investigations are composed of 11 projects involved with the inventory and cataloging of the sport fish waters of the state, sport fishery creel censuses, and access. Fish species that received special investigational effort include: Dolly Varden, anadromous fish, grayling, sheefish, whitefish, pike, char, and salmon. The information gathered from the combined studies provides necessary background data for a better understanding of management problems and constitutes a basis for necessary future investigations.

The subject matter contained in these reports is incomplete, and the findings and interpretations subject to re-evaluation as work progresses.

RESEARCH PROJECT SEGMENT

State: Alaska

Project No.: F-9-2

Name: Sport Fish Investigations of Alaska.

Job No.: 9-B-1

Title: Salmonid Rearing and Migration Study:
Ship Creek System.

Period Covered: July 1, 1969 to June 30, 1970.

ABSTRACT

A total of 95,900 smolt-size silver salmon, Oncorhynchus kisutch, and 101,300 king salmon, O. tshawytscha, were marked with an adipose finclip and released in Ship Creek.

A total of 290,600 king salmon eggs were obtained from 32 females captured in Ship Creek.

During 1969, marked king salmon returns from 1966, 1967, and 1968 were identified; also captured were marked silver salmon from the 1968 and 1969 release.

A total of 459 king and 142 silver salmon were enumerated through the Chugach City Dam live trap.

RECOMMENDATIONS

1. Retain the present objectives of the study.
2. Emphasize the monitoring of local commercial fish canneries for marked adult salmon returns.

OBJECTIVES

1. To evaluate king and silver salmon production at the Fort Richardson cooling pond in attempting to increase the stocks of anadromous fishes in Ship Creek.
2. To investigate Ship Creek as a source for the procurement of king salmon eggs for experimental hatching and rearing.
3. To provide recommendations for the management of king and silver salmon in these waters and to direct the course of future studies.

TECHNIQUES USED

1. King and silver salmon were anesthetized with tricaine methanesulphonate (MS-222), marked with an adipose finclip, and released in Ship Creek.
2. Adult king salmon were captured at the Chugach City Dam live trap and the Ship Creek weir for

the procurement of eggs. Eggs obtained were transferred to the Fire Lake Hatchery for incubation.

3. Returning king and silver salmon were enumerated at the Chugach City Dam live trap. All were checked for finclips.
4. Sport Fish Division personnel monitored portions of the commercial harvest in upper Cook Inlet by checking a local cannery for returns of marked adult king and silver salmon. Length, age, and sex data was obtained from canneries to provide necessary data for evaluation.

FINDINGS

Past information collected on this project is presented in Dingell-Johnson Annual Progress Reports by Kubik (1965, 1966, 1967, 1968, and 1969).

Fort Richardson Cooling Pond

Since 1963 king salmon have been reared in the Fort Richardson cooling pond and released in Ship Creek in an effort to enhance the king salmon fishery in that area.

A description of the cooling pond is presented in Federal Aid In Fish Restoration, Annual Report of Progress, Volume 4, Job No. 8C-4, 1962-1963.

A total of 898,150 king salmon fingerlings have been marked and released in Ship Creek since 1963. Table 1 shows the number marked and released; also the type of finclip. Due to two unfortunate happenings, the 1964 Alaska earthquake and a virus-like disease in 1965, most of the rearing king salmon at the Fort Richardson pond were lost. Not until 1966 was the number of marked and released king salmon large enough to provide an adult return.

A total of 101,300 king salmon fingerlings from local Ship Creek stocks, averaging 16.6 per pound, were released from the cooling pond into Ship Creek in early May, 1969; 95,900 fingerling silver salmon of Big Creek, Oregon, origin at 13.7 per pound were also planted in Ship Creek during early May.

Tricaine methanesulphonate (MS-222) was used to anesthetize fish held for finclipping; all were marked by an adipose finclip.

King Salmon Egg Take

A total of 290,600 king salmon eggs were obtained from 32 females captured in Ship Creek. Egg-take activities commenced on July 15, and terminated July 25.

The 32 spawned, female king salmon ranged in length from 889 to 1,117 mm with a mean length of 986 mm. Age was determined for 21 of the females. In this sample, six-year-old fish comprised 76%, and five-year-old fish 24% of the total number.

The average size of the 20 males used was 935 mm with a length range of 686 to 1,130 mm. Age was determined for 12 males and the composition of the sample indicated that 50% were five years old, 33% were six years old, and 17% were four years old (Table 2).

A total of 57 dead king salmon checked on Ship Creek ranged from 558 to 1,219 mm. The males averaged 1,152 mm while females averaged 981 mm. Age was determined for 45 of the fish. In this sample, age 1.4 comprised 73.3%, 1.3 fish 22.2%, and 1.2 fish 4.5% (Table 3).

TABLE 1 Ship Creek King and Silver Salmon Release - Fort Richardson Cooling Pond, 1964-1969.*

<u>Year</u>	<u>No. of King Salmon</u>	<u>No. of Silver Salmon</u>	<u>Origin</u>	<u>Date Released</u>	<u>Size</u>	<u>Mark</u>
1969	95,900		Ship Creek	5/5-5/16	16.6/lb.	Adipose
		101,300	Oregon	5/5-5/16	13.7/lb.	Adipose
1968	81,316		Ship Creek	5/23-5/24	28.5/lb.	Adipose
		129,318	Oregon	4/15-4/22	19.9/lb.	Adipose
1967	474,516		Green River	5/22-6/21	58.4/lb.	Adipose
	63,852		Ship Creek	5/8-5/12	18.6/lb.	Adipose
1966	166,870		Green River	July	98/lb.	Half-dorsal
1965	8,432		Green River	8/6	3.9 in.	Left pectoral
	352		Ship Creek	3/18	3.0 in.	Adipose
1964	428		Ship Creek	6/3	3.0 in.	Right pelvic & adipose

*Adult returns of king salmon are given in Report No. 9-B, Table 5.

TABLE 2 Age-Length Frequency Distribution by Sex of King Salmon from the Ship Creek Egg Take, 1969.

Length (mm)	Age Males			Age Females		Total
	1.2	1.3	1.4	1.3	1.4	
660 - 708	2					2
711 - 759						0
762 - 810		1				1
812 - 861						0
863 - 912		1		1	1	3
914 - 962		2	1		2	5
965 - 1,013		2		3	2	7
1,016 - 1,064				1	5	6
1,066 - 1,115					5	5
1,117 - 1,166			3		1	4
Total	2	6	4	5	16	33
% of total	6.0	18.2	12.1	15.2	48.5	100

TABLE 3 Age-Length Frequency Distribution by Sex of King Salmon Carcasses from Ship Creek, 1969.

Length (mm)	Age Males			Age Females		Total
	1.2	1.3	1.4	1.3	1.4	
558 - 607	1					1
609 - 658	1					1
660 - 708						0
711 - 759						0
762 - 810						0
812 - 861		1				1
863 - 912		1		1		2
914 - 962				6		6
965 - 1,013		1			6	7
1,016 - 1,064			1		11	12
1,066 - 1,115			3		7	10
1,117 - 1,166					3	3
1,168 - 1,216			1			1
1,219 - 1,267			1			1
Total	2	3	6	7	27	45
% of total	4.5	6.7	13.3	15.5	60.0	100

Marked Returns

During the 1968 egg-take operation, six returning "jack" king salmon with adipose finclips were captured. The 1966 brood year fish ranged from 419 to 483 mm; the average weight was two pounds. The marked fish were released from the cooling pond into Ship Creek during May, 1967.

The following are marked king salmon returns identified from Ship Creek during 1969:

- 1968 mark - Two adipose-marked fish from the 1968 release. The 1968 marked fish were both 319 mm in length.
- 1967 mark - Fourteen adipose-marked fish from the 1967 release. Marked fish from the 1967(Ad) release ranged from 457 to 800 mm. Twelve adipose marked fish from the 1967 release were identified at the local commercial cannery. Five of the 12 marked king salmon checked at the cannery were measured for length and ranged in size from 558 to 863 mm.
- 1966 mark - Six half-dorsal marked fish from the 1966 release. Three of these fish were checked for length and measured 724, 876, and 889 mm.

Silver Salmon

Since 1968 a total of 225,200 silver salmon of Big Creek, Oregon, origin have been released in Ship Creek.

During 1969 six marked adult silver salmon from the 1968 release were checked on Ship Creek and ranged in length from 635 to 660 mm.

Two marked silver salmon, 241 and 318 mm, were caught at the Chugach trap. These fish were from the 1969 release.

A total of 15 marked silver salmon were checked at the local cannery. All of these fish were adults released from the cooling pond in 1968. The silver salmon ranged from 533 to 660 mm, with an average length of 599 mm.

Chugach Dam Live Fish Trap

A fish trap 8-feet wide x 14-feet long x 4-feet deep was installed on the upstream side of the fish ladder during 1968. The city dam is located approximately one mile from the confluence of Ship Creek and Cook Inlet. The trap was constructed for the enumeration of king and silver salmon, egg-taking purposes, and recovery of marked fish.

During 1969 the first king salmon to enter the trap was on June 15. The first marked (Ad) king salmon was captured on June 21. A total of 459 king salmon were passed or held for spawning purposes through the trap, until October 23.

A total of 142 silver salmon adults were captured and released at the trap. The first silver salmon entered the trap on July 7, the last on November 6. The first marked (Ad) silver salmon was taken on October 12.

A total of 62 chum salmon, O. keta, and 211 pink salmon, O. gorbuscha, were also enumerated through the trap.

Ground counts on November 26 and December 1 revealed several king and silver salmon carcasses. During this period, five half-dorsal and two adipose marked king salmon and two adipose marked silver salmon were identified.

Identification as to species and marks of other carcasses was difficult because of decomposition and freezing temperatures.

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